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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • MARCH 24, 1945

TECHNOLOGY DEPT.

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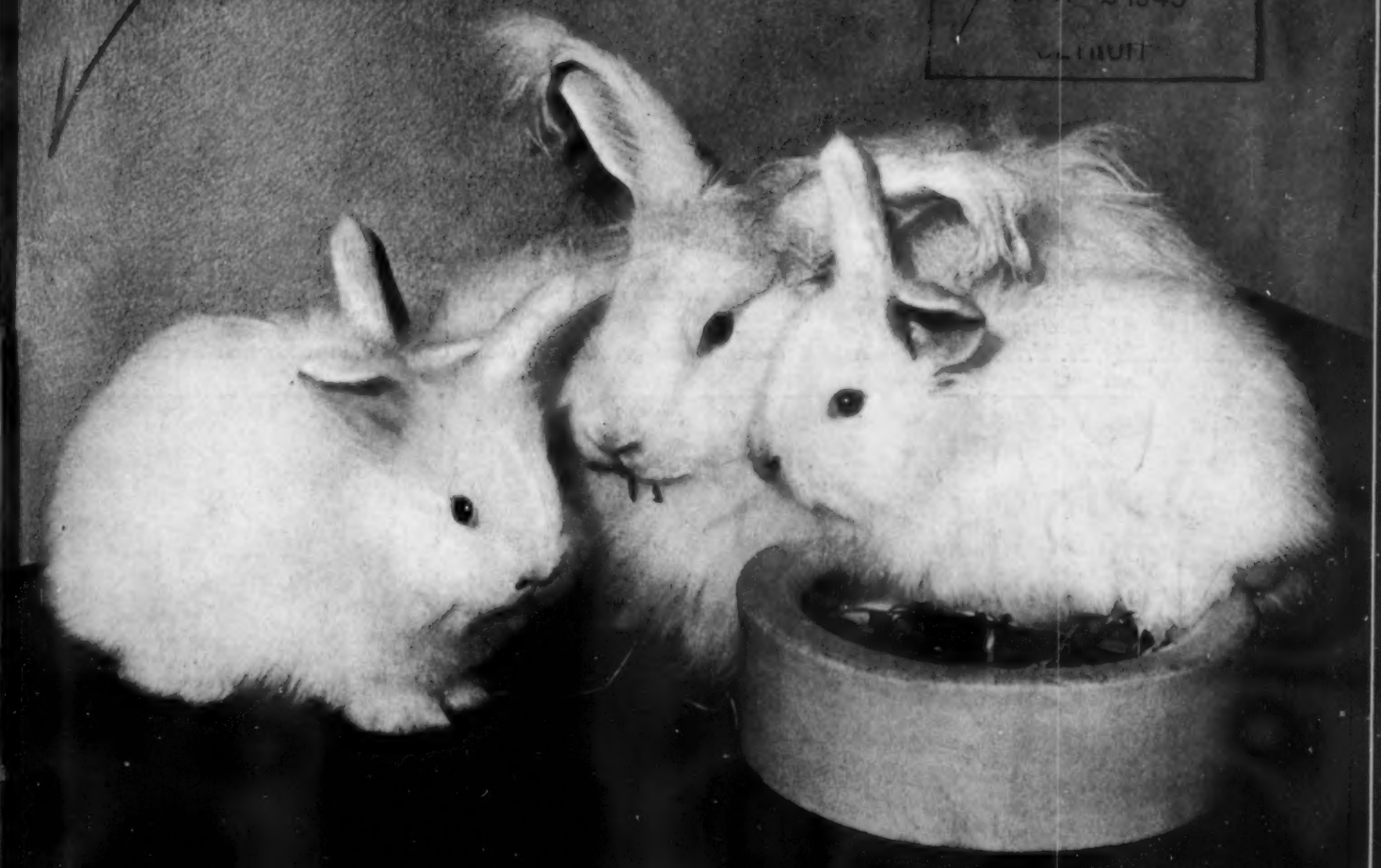

For Easter
See Page 182

A SCIENCE SERVICE PUBLICATION

Helping the sick get well

LAMPS that kill germs . . . X rays to guide the surgeon's fingers . . . operating rooms bathed in glareless light . . . air conditioning to screen out street noises and dust.

Helping the sick get well is only one of the contributions of General Electric. From the research and engineering in G.E.'s laboratories come products to make your work easier, your home brighter, creating new comforts, better jobs.

The pictures you see here are typical of things accomplished for you by G-E research and engineering. *General Electric Company, Schenectady, N. Y.*

Mirror of D-Day injury! How X rays speed treatment of war injuries is shown in this picture of Seaman Brazinski's thigh. On D-Day a German mine shattered his boat, blew him 20 feet in air. Rescued by an LST, rushed to England, X rays quickly defined his injury, permitted accurate setting. Portable G-E X-ray machines at St. Albans Naval Hospital, L. I., regularly check his progress. Through the skill of doctors 97 per cent of the wounded in this war are saved. The modern form of X-ray tube was invented by Dr. W. D. Coolidge, G-E scientist. X-ray units built by the G.E. X-Ray Corp. are at battlefronts the world over.

New lamp kills germs . . . Germ-laden air is purified by the new G-E germicidal lamp. It is already at work in hospitals, in battle-front operating rooms. Tried in a school classroom during a measles epidemic, only one-fourth as many children contracted measles as compared with unprotected classrooms.

Seeing the invisible . . . The electron microscope, more powerful than ordinary microscopes, gives doctors a new tool to fight disease. Here is the germ, *bacillus subtilis*, magnified 8,000 times. G-E engineers are working to make available a *portable* electron microscope for industry.

Helps treat Infantile Paralysis . . . Doctors wanted hot packs to relieve pain and reduce muscular spasms, but such steam packs tended to burn. G-E workers put together a machine for hospital use that produces heated packs that even at 180°F. will not burn the patient's skin.

★

Hear the G-E radio programs: *The G-E All-girl Orchestra*, Sunday 10 p.m. EWT, NBC—*The World Today news*, Monday through Friday 6:45 p.m. EWT, CBS—*The G-E House Party*, Monday through Friday 4:00 p.m. EWT, CBS.

FOR VICTORY—BUY AND HOLD WAR BONDS

GENERAL ELECTRIC

MEDICINE

Don't Waste Penicillin

Though there is now enough for general civilian use as well as for the armed forces, the precious drug should not be used except for certain conditions.

➤ EVEN though there is now enough penicillin for general civilian use as well as for the armed forces, there is not enough of it to waste any. Use of the precious mold chemical in conditions which it does not remedy would be a waste.

Experience with over 5,000 cases which have been carefully studied under the auspices of the National Research Council and the Office of Scientific Research and Development show that penicillin is good for the following conditions:

1. All staphylococcic infections with and without blood stream involvement including acute and chronic osteomyelitis, carbuncles and soft tissue abscesses, meningitis, cavernous or lateral sinus thrombosis, pneumonia, empyema, carbuncle of the kidney, wound infections, burns and endocarditis (a form of heart disease).
2. All cases of clostridia infections, which includes gas gangrene.
3. All hemolytic streptococcic infections with invasion of the germs into the blood and all serious local infections. The list of these conditions includes cellulitis, mastoiditis with brain involvement, pneumonia and empyema, childbed fever, peritonitis and endocarditis.
4. Childbed fever and local infections due to anaerobic infections.
5. Meningitis, pleurisy and endocarditis due to pneumococci and all sulfa-drug-resistant pneumococcic pneumonia.
6. All gonococcic infections, including those complicated by arthritis, eye trouble, endocarditis, peritonitis and epididymitis.
7. All cases of anthrax.
8. All cases of chronic pulmonary suppuration in which operations are contemplated.
9. All meningococcic infections in which sulfa drugs fail.
10. All cases of bacterial endocarditis in which the heart trouble is due to germs susceptible to penicillin.

Syphilis is listed as a condition in which penicillin has been found effective but its position not definitely defined.

Influenza, tularemia, undulant fever, tuberculosis, acute rheumatic fever, acute and chronic leukemia, malaria, infantile paralysis, virus infections and cancer are listed, along with a number of less familiar ailments, as conditions for which penicillin should not be used because it does not have any effect on the illness.

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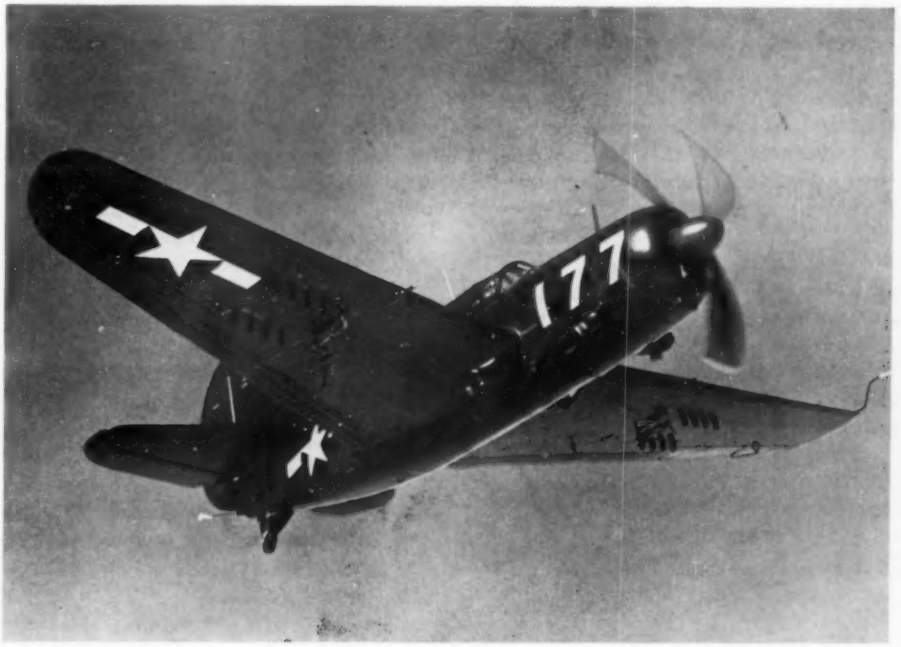
Rushed by Air

➤ A HUNDRED and thirty billion units of penicillin, or about 6,500,000 doses of the life-saving mold chemical, were rushed to the nation's drug stores, hospitals and drug supply houses for civilian use which began on March 15.

Between that date and April 1, a total of 130,000,000,000 units will be available for civilian use by War Production Board allocation. (From 5,000 to 40,000 units are needed in each injection, depending on the illness.) This is more than three times as much as has ever been released for an entire month by WPB's civilian penicillin distribution unit in Chicago. For the month of April, the civilian allocation will be increased to 150,000,000,000 units. After that, monthly allocations are expected to be increased each month.

The nation's airlines are carrying large quantities of the life-saving chemical, which must be kept at a temperature of 50 degrees Fahrenheit or less. Some of it, from E. R. Squibb and Sons and Winthrop Chemical Co., was shipped by air express during the first week in March, in anticipation of the new WPB allocation. Cheplin Laboratories, at Syracuse, N. Y., shipped in excess of 5,000,000,000 units, most of it by air express, to about 200 distribution centers throughout the United States during Wednesday night, March 14, and Thursday morning, March 15. Charles Pfizer and Co., with a March allocation of over 50,000,000,000 units, is shipping to six large distributors.

Although penicillin for civilian use will go into drug stores, it probably will not go directly from the producers to the neighborhood druggist or the physician. Like many other drugs, it will go from producer to local distributor and thence to the drug store and the physician. Some of the penicillin producers are drug producers with their own distribution centers. Others are chemical manufacturers who never before have been medical distributors and will dis-



CURTISS SB2C-4—Looking deadlier than ever in the Navy's new all-midnight blue camouflage, this is the newest version of the SB2C Helldiver dive-bomber and is revealed to carry one of the greatest loads of destructive power ever mounted in a single-engine aircraft. (See SNL, March 3.)

tribute through firms already in this business.

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Doctors Worried

➤ WITH THE release of penicillin for general civilian use, physicians are beginning to worry over its possible indiscriminate use, particularly if and when it becomes available in forms the layman can give himself. These may include pills, lozenges, chewing gum, dental paste, vaginal jelly, face creams, shaving pastes and similar products.

Two physicians, Lieut. Leslie A. Falk, of the Army Medical Corps, and Dr. Herman Goodman, of New York, have already written to the editor of the *Journal of the American Medical Association* on the subject. Their letters appear in the March 17 issue of the journal.

Development of a sense of false security is perhaps the greatest danger, in the opinion of Lieut. Falk.

"Penicillin is of no use in many diseases, and in others there is danger from inadequate dosage," he points out. "For example, it is not hard to visualize that a patient with a chancre would hear that penicillin cures syphilis, would get hold of some, take it (or have it administered) in inadequate dosage, see his chancre disappear, feel that he has been cured of the disease, and then develop cerebrospinal or cardiovascular syphilis many years hence. Numerous other examples can be imagined, and some have probably already occurred."

Danger of inadequate dosage is also stressed by Dr. Goodman. He suggests that not only will sick people in such cases fail to get well but that "a large army of infection carriers" may develop from persons who have not had enough of the mold chemical to eradicate the germs.

A person treating his own strep sore throat with penicillin cough drops or chewing gum is probably one example of what Dr. Goodman fears. Such a person might absorb enough penicillin to make him feel better but not enough to clear up the infection and he would go around spreading it to others.

Continuing research on best methods of using penicillin, and prevention of its abuse by the industry, medical and pharmaceutical professions and government agencies are urged by Lieut. Falk. He also stresses the need to retain enough government control to prevent development of shortages through misuse of the precious material and to prevent a "riot of commercial penicillinization of our population."

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ORDNANCE

Rockets Prove Themselves

➤ THE TREMENDOUS destructive power of rockets has proved these new offensive weapons as effective against enemy ground units and moving targets. A report on the results of 323 sorties in which 1,117 rockets were expended showed that 35 locomotives, 85 tanks, 15 armored cars, 164 motor transports, 19 gun positions, 9 aircraft hangars, 6 warehouses and factories, 36 good cars and 2 ships had been destroyed in the European theater of war, by one squadron over a period of two months. This means that a total of 362 items were destroyed by rockets. About 35% of the rockets were destructive hits.

An analysis of these figures, prepared at the Fighter Gunnery school of the Army Air Forces at Foster Field showed that an average of three or less rockets are fired to get one of them accurately knocking out an enemy locomotive, a motor transport or a gun position. About five rockets are expended for each tank knocked out, tanks being such small targets that they are harder to hit.

Rockets have terrific penetration effect, but little fragmentation effect on enemy targets. A five-inch rocket launched from a P-47 or a P-38 can cut through three feet of reinforced concrete and four feet into semi-reinforced concrete. This is equivalent to the fire power of a Navy five-inch gun. Rockets thus turn a fighter plane into flying battleship.

Trained fighter pilots learn to launch rockets and fire bullets from swift combat ships at this school under the direction of Col. H. H. Van Auken, a veteran of 17 years' service with the Army Air Forces. The actual firing of machine guns and rockets by flyers is accomplished at Matagorda Peninsula on the Gulf of Mexico.

Launching a rocket from a plane is no simple procedure. Rockets are affected by the airspeed of the plane, dives, maneuvers and other factors. Slipping or skidding a plane can cause a rocket to completely miss its target. While the line of sight to the target is the direction in which the plane is pointed, a slip or skid may cause the rocket to travel at 600 miles an hour at an angle of 45 degrees to the target. These factors, and others, must be taken into consideration by fighter pilots who are also gunners and rocketeers.

Science News Letter, March 24, 1945

Dogfish shark, the liver of which is now America's chief source of vitamin A, is so called because of its great appetite for fish; the Pacific dogfish, closely related to the Atlantic variety, is a four-foot gray shark.

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MEDICINE

Measles Affects Eyes

Cataracts of a peculiar type and other congenital defects may occur in babies whose mothers have German measles during the first months of pregnancy.

➤ CATARACTS of a peculiar type and other congenital defects may occur in babies whose mothers have German measles during the first three months of pregnancy. Discovery of this new hazard to infant health was made by Australian medical scientists and has since been confirmed by American scientists.

First to report the matter was Dr. N. McA. Gregg of Australia, who recorded 78 cases of a new type of congenital cataract occurring in babies between December, 1939, and January, 1941. With few exceptions, the babies' mothers had suffered from German measles during the early stages of pregnancy. Most of the babies were small, undernourished and difficult to feed and 44 of them also were born with heart defects.

Because similar cases had occurred in South Australia, five medical scientists of the Institute of Medical and Veterinary Science at Adelaide, Charles Swan, A. L. Tostevin, the late Brian Moore, Helen Mayo and G. H. Barham Black, investigated the matter under the auspices of the Australian National Health and Medical Research Council.

All physicians in South Australia were asked to send information about babies whose mothers had German measles or other illness with a rash during pregnancy. As many mothers as possible were interviewed. Information about the illness was obtained, to make certain whether it was German measles, and information about the babies' health was also obtained.

The mothers of 49 babies in this investigation suffered from German measles during pregnancy. In 31 of the babies congenital defects were found. These included cataract, deaf-mutism, heart disease, microcephaly (abnormal smallness of the head), and mental retardation. As the children develop, the doctors state, it is possible that other defects may become evident.

German measles is such a common disease that it is strange, the scientists point out, that congenital defects in offspring whose mothers suffered attacks during pregnancy have not been noted before. It may be, they suggest, that the virus which causes the disease has become more virulent or undergone some more subtle change within the past few years.

The next step in dealing with the problem, they state, should be to isolate the germ that causes German measles with the object of preparing a vaccine against it. In the meanwhile they suggest studying the effects of giving convalescent serum to expectant mothers who have been exposed to German measles and also to all pregnant women who have not already had an attack of the disease.

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ETHNOLOGY

Figure With Bell Is Modern Maori Art

A letter to the Editor from Te Rangi Hiroa (Peter H. Buck), Director of the Bernice P. Bishop Museum, Honolulu, Hawaii:

➤ "ON THE front cover of SCIENCE NEWS LETTER of January 13, there is an excellent illustration of a Maori carved figure with a mouth opening that passes completely through the head and is capacious enough to permit of a bell being suspended from its palate. This unique figure is labeled as an 'Ancient God' (following U. S. Navy photo caption), and the text states that 'American archaeologists say that not much is known to science about these Maori images, and one archaeologist expressed concern that a modern dinner bell has been placed in such an archaeological treasure.' It is evident that the archaeologists consulted know nothing about modern Maori art which is to be expected as the subject does not fall within the field of archaeology.

"The explanation of the figure is as follows. To prevent the Maori craft of carving from dying out, the New Zealand government established a School of Maori Carving at Rotorua (not Rotarua) after 1920. The Maori students were selected from various tribes and they were taught not only to copy old models, but also to adapt the craft to the production of objects which would serve modern requirements. The carved figure in your illustration was made expressly for the bell which is more of an 'archaeological' object than the wooden stand. Thus, by no stretch of the imagination can the carving be regarded either as an 'archaeological treasure' or as an 'ancient god.' I knew the Maori villages at Rotorua very well indeed and the bell stand was not there when I left New Zealand in 1927. It must have been carved since then and it cannot be older than 17 years at the most.

"The Maoris do not mutilate ancient objects, but they can create new objects which retain the atmosphere of their ancient craft. The bell stand is a fine example of modern art and American archaeologists, as well as your reading public, may enjoy it for what it is without worrying about any additional unsolved mysteries."

Science News Letter, March 24, 1945

MODERN ART

CHEMISTRY

Bubbles of Carbon Dioxide Used in Floating Soap

➤ A NEW and very simple method for preparing floating soap is the subject of patent 2,371,175, granted to Charles W. Kelley of Duck Hill, Miss. Most floating soaps have air whipped into them, in larger or smaller bubbles; this requires special machinery. The present invention contemplates the use of bubbles of carbon dioxide. These are generated by the addition to the melted soap mass of a small quantity of sodium bicarbonate, which "fizzes" on contact with the soap's ordinary midly acid constituents.

Science News Letter, March 24, 1945

MILITARY SCIENCE

Air Successes Measured

Combat movies show the effectiveness of fighter planes in attacks on the enemy; fighter pilot has much in common with caveman.

➤ THE INCREDIBLE success of Army Air Force fighters in their attacks on enemy planes and ground targets was shown when combat films taken in the European theater were displayed at Foster Field, Texas. The movies, taken with a 16-millimeter camera mounted on the gun of the plane, show where the bullets hit the enemy, where the bullets were missing and why they missed. Thus these films become gunnery instructors for pilots in combat and valuable visual aids in training fighter pilot gunners for combat.

While viewing film after film taken in the heat of combat and while seeing enemy radar stations, locomotives, transports, rocket planes and other units burst into flame before your eyes, you realize that the modern fighter pilot has much in common with our hairy ancestor, the caveman.

The caveman's weapons were a rock and a club. He wasn't very effective when his target was too far away. It was beyond his maximum effective range.

The fighter pilot has better weapons, speedy planes, machine guns, and electronically operated computing sights through which he can line up his target. Yet he, like the caveman, is not very effective when he is out of range. The caveman knew he could throw rocks when he was within throwing distance. Our fighter pilots can knock 'em over when they are within effective shooting distance, which gunnery experts call the maximum limit of effective range.

The closer a fighter pilot approaches his target the more deadly he can be. At 500 feet his aim is more deadly than at 1,000 feet. The maximum effective range of our fighter plane's bullets is 1,200 feet. The ideal firing range is 750 feet.

Fighter pilots are not born with a knowledge of good shooting. They acquire it through hard work and much practice. The training they receive today is under the supervision of Lt. Gen. Barton K. Yount, commanding general of the AAF Training Command.

Some of the things student fighter pilots learn at this school for fixed gunnery are that they can destroy aerial targets more quickly and with less danger to themselves when they hit from the side. A target moving straight away from them or straight toward them does not appear to move; they can hit this type of target by aiming directly at it. They must aim ahead of a target moving across their line of sight. The faster the target, the farther ahead they must aim. This is the same thing a football player does when he throws a pass. The faster the receiver, the farther ahead of him he throws the ball. Technically this is called deflection allowance.

Flying three types of fighter planes, the P-38, P-47, and P-51, pilots learn the latest techniques in fixed gunnery to prepare them for their new role of supporting ground troops. Firing at wire mesh tow targets, each fighter plane uses .50 caliber bullets dipped in red, green, yellow or black paint. When the bullet hits the target its hole is rimmed with color, so that when the target is brought in and scored, each pilot knows how many hits he got.

For training at hitting ground targets, fighter pilots pour a stream of bullets at a simulated hut located in a 75-foot circle. The planes dive down from an altitude of 11,000 feet and begin firing at between 4,000 and 5,000 feet.

Bombing runs, using 3.5-pound practice bombs, are started from 5,000 feet and 3,500 feet, coming in over the target which is usually a simulated airplane, at great speed.

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ZOOLOGY

Angora Rabbits Increased Greatly Since War Began

See Front Cover

➤ SOFT CAPS for babies and fuzzy mittens for evening wear are now being made from Angora wool produced in the United States from rabbits like those shown in the photograph by Fremont Davis, Science Service staff photographer, on the cover of this SCIENCE NEWS LETTER. Before the war thousands of pounds of this soft white wool were imported each year from Europe, three-fourths of the total supply coming from France. Today hardly any Angora rabbit wool reaches America from abroad and the local industry is beginning to flourish.

The wool, which may grow from five to eight inches a year on these rabbits, may be either sheared or plucked. Spinning mills pay a premium for plucked wool actually pulled out by hand at the time of molting. Breeders pluck the rabbits three or four times a year.

Barber shears or electric clippers similar to those used on sheep may be used to shear Angora rabbits. If done about four times a year, the hairs attain a length of two and a half to three inches each quarter. From a mature animal not nursing young, about 12 to 16 ounces of wool may be sheared each year.

Little if any grooming between shearing periods is needed, provided the rabbits are properly cared for and the shearing done every 10 to 12 weeks. If the coat is allowed to grow for a longer period, the fibers are likely to become tangled and matted.

There are two types of Angora rabbits —the English and the French. The English, with its much softer wool, has a broad head and short ears. This type is well trimmed with ear tassels and bangs. The French, of a larger, more rangy build, has coarser wool. At present the price of wool is the same, since there is not enough of either type to ship alone.

During spinning and weaving the wool tends to fly, much of it dropping out or becoming entangled in the wheels of the machines. Thus at present few mills are equipped to handle Angora rabbit wool. The wool, frequently dyed lovely pastel shades, is not as sturdy as other types of wool and a binder is always used to give the thread added strength.

The type of wool best fitted for mill use and whether it is better to pluck or shear the rabbits is being studied by the Fish and Wildlife Service of the U. S. Department of the Interior in cooperation with the Bureau of Animal Industry of the U. S. Department of Agriculture. Rabbits with an even more plentiful supply of this soft, fuzzy wool may result from breeding studies now in progress.

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Paper wrappers on *tomatoes* during shipment in cold storage should be removed when the tomatoes are placed in a warm room to ripen because the cold vegetable causes moisture to condense in the paper which helps decay organisms.

ASTRONOMY

Spicules Short-Lived

➤ TINY prominences of the sun have been found to be much more frequent and of shorter duration than was previously realized. These spike-like prominences, called spicules, lasted only four or five minutes from the time they were first detected until they faded out entirely.

The existence of a large number of these spicules, which had previously been noticed in some of the best eclipse photographs, was discovered in a series of photographs taken with the coronagraph at the Fremont Pass Station of Harvard College Observatory, Climax, Colo., by Dr. Walter O. Roberts.

The typical spicule showed up first as a barely detectable lump on the limb of the sun. The lump rapidly enlarged, growing both broader and taller, and was brightest just before it reached its full height.

After the prominence had reached its maximum elongation, which occurred usually a minute or two after it first appeared, it began to fade out gradually without any detectable motion.

The entire lifetime of most of the spikes from first to last appearance was on the average only four or five minutes. These tiny prominences usually were about 4,500 miles wide. They were but 1,700 to 1,800 miles high, as contrasted with some of the larger solar prominences which sometimes are 500,000 miles high.

The largest spicules sometimes last 11 minutes, and some of the smallest only two minutes. The small ones probably occur numerously, and the large ones only occasionally.

At a given moment it is frequently possible, Dr. Roberts reports, to see at one time as many as 25 of the spicules in a 60 degree arc in the polar regions of the sun.

Typical spicules erupt more frequently from regions of the sun which usually show little disturbance of any sort. They are not likely to occur near large prominences or in areas where there are sunspots. They are most commonly seen in polar regions where such disturbances are infrequent.

The photographs from which the study of the spikes was made were taken at the rate of one picture each minute. Special sensitized film prepared for use on prominence photographs was employed.

The spicules may possibly be a link between the solar granules and polar coronal plumes, but further study will be needed. The spicules are the only solar features so far known which seem to indicate a continuous flow of material out through the chronosphere, the gaseous layer of incandescent hydrogen which surrounds the sun, into the regions of the sun's corona.

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TECHNOLOGY

Heavy Rolling Produces Improvement in Leather

➤ HEAVY rolling of shoe sole leather, or compression by other means, produces an improvement in wear, it is found by recent tests made by the National Bureau of Standards, in which a regiment of soldiers in an officer candidate camp were used, together with some civilian workers in war industries.

The tests showed also that differences in the wearing quality of 20 commercial tannages of vegetable sole leather were very small, with no significant difference in the wear of leather tanned from domestic and from cold-storage hides. They showed further that water-soluble materials and grease are lost from soles in service, the greatest loss being shown by water-soluble ash.

The so-called "rubber" abrasive machines are of little use, it was found, in predicting the wearing qualities of tannages. The wearing quality can be estimated, to a degree, by the water-soluble content, the firmness, and the degree of tannage of the leather.

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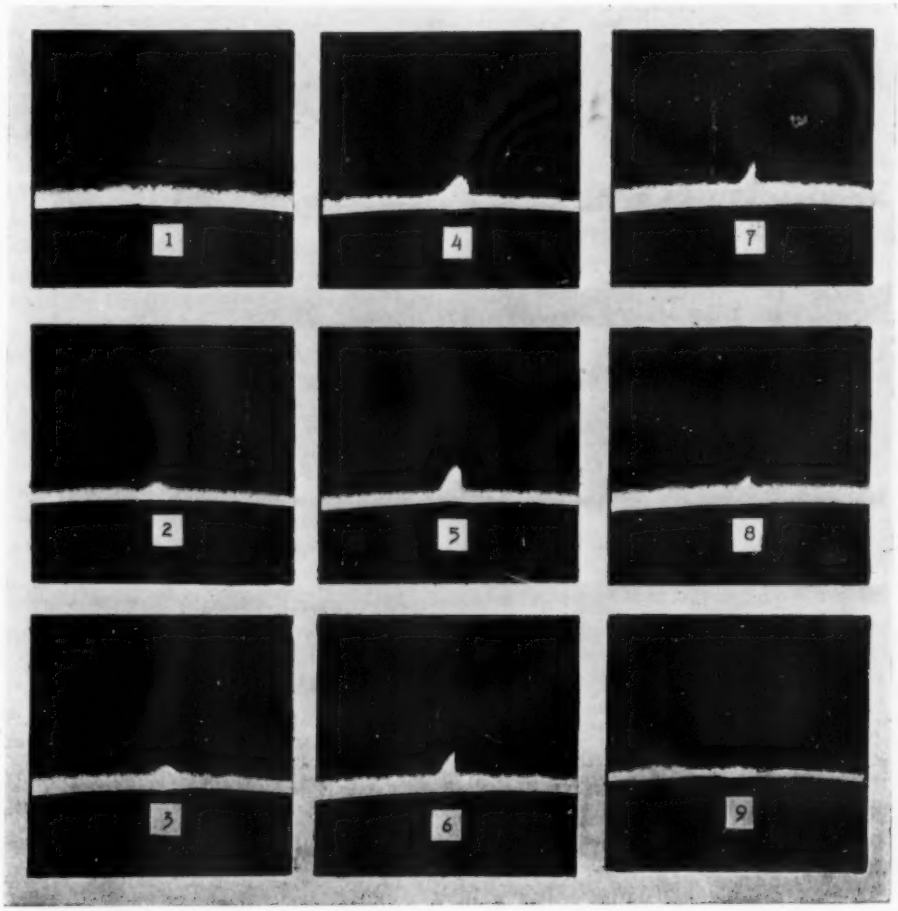

***SHORT-LIVED**—Tiny prominences rising from the brilliant gaseous layer surrounding the sun, spicules last only a few minutes and disappear. The average spicule passes through all the stages shown in this series of photographs taken by Dr. Walter O. Roberts, of Harvard College Observatory, in but four or five minutes. It is usually brightest in its early stages, as shown in the fourth picture.*

SEISMOLOGY

Japanese Homeland Again Shaken by Eathquake

➤ ANOTHER earthquake has shaken the Japanese homeland, seismologists of the U. S. Coast and Geodetic Survey announced after examining data transmitted through Science Service by five observatories in this country. The shock, of only moderate intensity, had its epicenter in the region of latitude 38 degrees north, longitude 136 degrees east. This is near the Noto peninsula, on the west coast of Honshu, the island on which Tokyo and most of Japan's other large cities are located. The quake started at 5:37½ p.m., EWT, on Sunday, March 11.

Stations reporting were those of the Jesuit Seismological Association at Georgetown University and St. Louis University, the Utah State Agricultural College at Logan, Utah, and the observatories of the U. S. Coast and Geodetic Survey at Tucson, Ariz., and College, Alaska.

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MEDICINE

Some Diseases Cured by Swallowed Penicillin

➤ HOPE that in future patients can swallow their doses of penicillin instead of having them injected by hypodermic needle every three hours is increased by a report to the *Journal of the American Medical Association,* (Mar. 17)

Penicillin by mouth was effective in a number of cases of gonorrhea and other diseases, Drs. Paul Gyorgy, H. N. Vandegrift, William Elias and L. G. Colio of Philadelphia, and F. M. Barry and J. D. Pilcher of Cleveland report.

With the penicillin, trisodium citrate was given to act as a buffer against the acid in the stomach. Destruction of the mold chemical by the stomach acid before it could get into the blood and achieve its healing effect has been the difficulty heretofore in giving it by mouth. Penicillin is sensitive to alkali as well as acid, so giving it with an alkaline antacid was considered impractical and undesirable.

The gonorrhea patients were cured in one to three days with doses of penicillin comparable in amount to those given by injection for treatment of this disease.

A three-year-old boy with chronic otitis media (running ear) had been getting sulfathiazole for 23 days without any improvement. He was cured after 20 doses of penicillin with sodium citrate had been given by mouth every three hours, which would take two and one-half days.

Penicillin could be detected in the blood, some of the studies showed, four hours after it had been swallowed, whereas it is rare to find it in the blood even three hours after injection into the muscles.

Science News Letter, March 24, 1945

RADIO

New Television Receiver Shows Brighter Pictures

➤ A NEW television receiver for postwar homes that projects pictures like movies that are brighter, clearer, and five times larger than were possible on prewar sets was demonstrated by Dr. C. B. Jolliffe, vice-president in charge of the laboratories of the Radio Corporation of America.

The screen of the new receiver is 16 by 21 1/3-inches in size and is made of a special plastic that has been treated to make the pictures show up brighter and clearer. It was made possible by four prewar technical developments which Dr. Jolliffe credited to RCA scientists and engineers. These include an improved high-voltage projection tube, a unique high-efficiency optical system, the plastic screen, and an automatic frequency control system.

Floor or console models incorporating the new television screen will cost about $395, including equipment for picking up FM and standard broadcast (AM) programs. Several models, selling as low as $150, will also be available. These less expensive models will be equipped with tubes for viewing pictures directly in a manner similar to that used in prewar television sets.

The optical system in the new television receiver consists of a bowl-shaped mirror and a specially designed molded plastic lens which delivers to the back of the viewing screen a picture six times brighter than could be obtained with an ordinary movie projector. The cathode ray receiving tube is mounted downward in the cabinet, with the bowl-shaped mirror below it and facing upward. Light from the face of the tube is reflected upward from the mirror through the plastic lens to a flat inclined mirror near the top of the cabinet. From the mirror, the light is reflected upon the back of the viewing screen. The entire receiver is not much larger than an average prewar radio receiver.

Science News Letter, March 24, 1945

IN SCIEN

CHEMISTRY

New Vitamin A Discovered, Twin to One Already Known

➤ DISCOVERY of a new vitamin A, twin to the one already known, is announced by C. D. Robeson and J. G. Baxter of the Laboratories of Distillation Products, Inc., in Rochester, New York.

In their report to the British scientific journal, *Nature,* they suggest calling these vitamin twins Gadol and Galol. Gadol comes from the Latin word for codfish and is given to the vitamin A which has long been known and was isolated in pure form about five years ago. Galol is derived from the word for shark, the fish from whose liver the second vitamin A was first isolated.

Existence of Galol has been suspected for some time but it eluded detection because it is present in smaller proportions in most fish liver oils. Its crystals are quite different in shape from those of the previously known vitamin A and it differs in some other respects, but it has similar potency as a vitamin. The two vitamins are believed to be geometric isomers.

Vitamin A is required for normal growth and health. Lack of it may lead to serious changes in the eye, including night blindness, and in other tissues of the body. Fish liver oils are the chief source of the vitamin, but foods such as carrots, sweet potatoes and green leafy vegetables furnish carotene which the body can convert into vitamin A.

Science News Letter, March 24, 1945

HORTICULTURE

Good Bread Made From Twenty-Year-Old Wheat

➤ WHEAT, kept over 20 years, still makes good bread if properly stored, report scientists of the U. S. Department of Agriculture and the Colorado Experiment Station. Baking tests with wheat kept 14 to 22 years in a dry, unheated room showed that the protein content was unchanged, the acidity had not increased enough to show up in the flavor of the bread, and the thiamin content of the wheat was still high.

Science News Letter, March 24, 1945

ENCE FIELDS

NUTRITION

Spinach May Come Back Into Nutritionists' Favor

➤ SIGNS THAT spinach may get back into favor with nutritionists, if not with small boys, appear in a report by Dr. Roe E. Remington and Dr. Cecil L. Smith of the Medical College of the State of South Carolina. (*Science,* Mar. 16)

Junior could, if he would, eat as much as two and three-quarters pounds of spinach daily without having his growth stunted or his bones malformed, so long as his diet is not short in calcium, if the scientists' studies with rats can be transposed to humans.

Chief objection to spinach by nutritionists had been that some substance in it, presumably oxalic acid, interfered with the utilization of calcium for bone formation. In the course of experiments testing the availability of iodine in certain vegetables, Drs. Remington and Smith had occasion to feed a commercially prepared powdered spinach to young rats on a diet that for years had been successfully used as a breeding ration. They decided at the same time to test the effects of the spinach on growth and bone formation.

The rats ate daily what would amount roughly to two and three-quarters pounds of spinach in a human dietary of 2,500 calories. No decline in appetite or efficiency of food utilization was noted, their growth was not stunted, and there was no harmful effect on their bones, where calcium deficiency would show up.

Science News Letter, March 24, 1945

GENETICS-MEDICINE

RH Positive Sensitivity May Last for Lifetime

➤ WARNING that great care should be taken in giving blood transfusions to women with Rh negative blood who have given birth even as much as 16 years earlier to Rh positive babies is given in a report by Dr. Lawrence E. Young and Dr. Donald H. Kariher, of Rochester, N. Y. (*Journal, American Medical Association,* Mar. 17).

Some physicians have believed that the antibodies built up in the mother's bloodstream by the Rh positive infant, which may cause a violent reaction to transfusion with Rh positive blood, will dissappear in the course of three or four years.

"Sensitivity to the Rh factor," these investigators report, "once it is acquired, may persist for many years, probably for life."

Although physicians are accustomed to expect dramatic symptoms such as chills and fever as danger signs of transfusion with incompatible blood, serious reactions can take place without any of these dramatic warnings, the physicians report. And Rh incompatibility is often unpredictable by any sort of matching test.

"The importance of vigilance on the part of those in charge of transfusions and the necessity of systematic investigation of any untoward symptoms or signs cannot be overemphasized," the physicians warned.

They recommend that nothing but Rh negative blood be transfused into Rh negative patients regardless of how long it is since they gave birth to an Rh positive baby or of any previous history of transfusions.

Science News Letter, March 24, 1945

CHEMISTRY

Flame-Resistant Plastic Developed for U. S. Navy

➤ FLAME-RESISTANCE, shock-resistance, and easy molding are outstanding properties of a new plastic developed in the laboratories of the General Electric Company for the U. S. Navy. The product can withstand fire without toxic effects during battle action, it is claimed, as well as the concussions and vibrations of battleship broadsides, and has good electrical properties.

Company chemists, working with Dr. Howard W. Haggard of Yale University, found that they could not use any appreciable amount of organic filler in a laminated plastic or molding compound to fit the Navy specifications without obtaining a material that gave off toxic gases likely to be fatal to human beings.

They therefore turned to experimenting with asbestos, glass fiber and other inorganic materials. The new plastic uses asbestos filler, because it provides the high flame-resistance, low toxicity and shock-resistance, and makes a material that is easily molded. Glass is used in another plastic development for the Navy for panel board on ships. It is made by bonding layers of glass cloth together with melamine resin under high pressure.

Science News Letter, March 24, 1945

ZOOLOGY

Earthworms That Glow Like Fireflies Found

➤ SMALL earthworms that shine like fireflies are the find reported by Cyrus N. Ray of the Texas Archaeological and Paleontological Society. (*Science,* Mar. 16)

Mr. Ray describes them as "small round, slender, pink earthworms varying from one-half inch to one and one-fourth inches in length and about as large in diameter as the small end of a hardwood toothpick. These earthworms have the same color, general appearance and movements as those of the much larger worms usually known as angle- or earthworms."

He first noticed the worms on a near-frosty night, when a chance scraping of leaf-mold on the ground disclosed small, glowing pellets, which at first he could not identify by casual outdoor examination. Scooping up some of the surface soil and taking it indoors, he discovered that the objects were the small worms, tightly coiled into little balls.

As the worms warmed up to the indoor temperature they apparently lost their power to glow, but regained it when chilled to the 36 degrees Fahrenheit that prevailed outdoors. Touching them with a sensitive fingertip, Mr. Ray believed that they felt warm; but he lacked suitable physical instruments to make an exact measurement of the heat given off.

Science News Letter, March 24, 1945

CHEMISTRY

Safer Manufacture of Smokeless Powder

➤ SAFER manufacture of smokeless powder is the objective of processes on which two Hercules Powder Company chemists, Bernhart Troxler and Leon W. Babcock, have taken out three patents, Nos. 2,370,130, 2,370,209 and 2,370,271.

The first two patents cover the use of inert gases, such as nitrogen, helium or carbon dioxide, as an atmosphere in the closed vessels in which all steps of manufacture are carried out. This is to minimize the danger of accidental ignition, always present when atmospheric oxygen is present. The third patent is on a large, bin-like apparatus into which the powder is introduced, after formation into grains, for its final steps of cleaning and drying, which at present involve several separate handlings, with transfers from building to building.

Science News Letter, March 24, 1945

MEDICINE

Oasis for Strep Germs

The Navy's disease fighters win their struggle in the northern Idaho panhandle despite sulfa-defying germs; mass chemoprophylaxis used.

By JANE STAFFORD

➤ IN THE northern Idaho panhandle there is a streptococcal oasis. Seeing it, you would never call the region an oasis. The olive and date trees traditional to oases for humans in the desert are lacking in this mountainous, forested section of Idaho. But it apparently has what it takes to make an oasis for that dangerous tribe of germs called streptococci. The Indians for generations avoided the region, though they lacked the knowledge to recognize it as an oasis for strep germs. White men did not know it was a streptococcal oasis, either, until the war turned the searchlight of modern medical science on it.

The Navy found out about this oasis when it built a big training station at Farragut. The station was opened in 1942 and within three months the health problem had become terrific.

Disease germs went on a rampage. They kept it up for two years. Mumps and all kinds of pneumonias occurred there more frequently than at other naval centers. The streptococcus family of disease germs gave the worst headache. These germs cause tonsillitis, bronchitis, sinusitis, ear trouble, scarlet fever, occasionally pneumonia and meningitis, and precipitate rheumatic fever and rheumatic heart disease.

Idaho's streptococcal oasis loosed a singularly tough and virulent form of streptococci. Some were the most dangerous we have had in this country since 1918. A man attacked by them would report sick one day with a sore throat. The second day he had streptococcal pneumonia. The third day he had empyema. Recruits came down with this virulent infection within two weeks after reaching the station.

Program Threatened

The oasis lived up to the Indian superstition about it with a vengeance, threatening to wreck the naval training program. The training station at Farragut would have been closed early in 1943 on the advice of naval medical authorities if there had been any place else to send the recruits needed for expansion of our Navy. But there was no alternative.

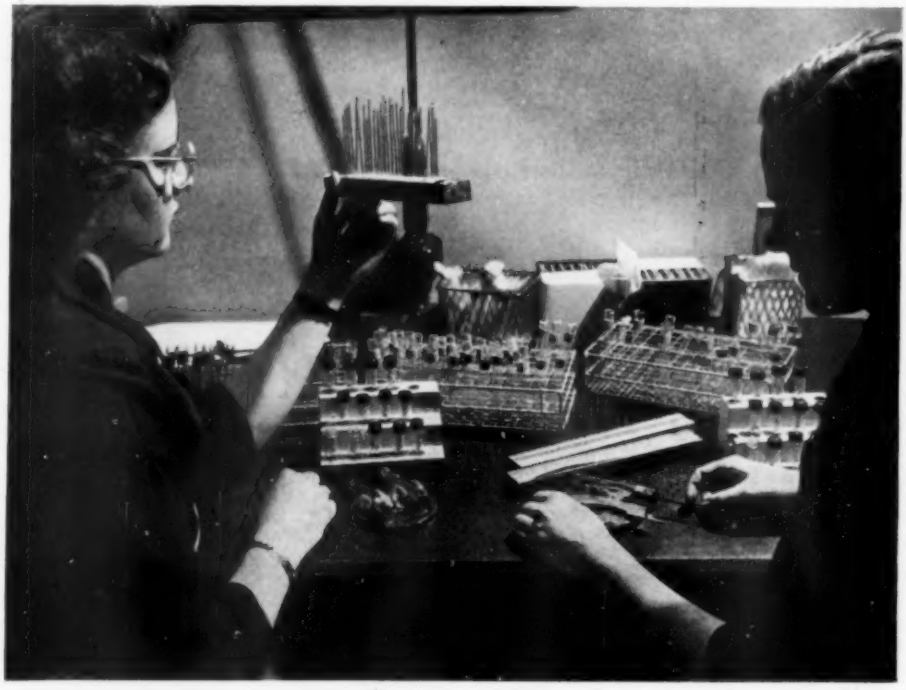
So instead of closing the training station in the oasis, it was expanded and recruit training continued until late fall of 1944. The Navy's disease fighters lived up to their slogan of keeping "as many men at as many guns as many days as possible" even if they could not achieve the medical ideal of keeping every man healthy.

They managed to squeak through to victory over the oasis. The naval training program was saved and we got enough bluejackets to swarm over the Pacific and push the Japs closer and closer to their ultimate defeat.

Sulfadiazine was the weapon that saved the day temporarily at Farragut, holding the fort against the streptococci even though the walls were breached and the streptococcal invasion came dangerously near to being overwhelming. These germs were a problem not only in Idaho's oasis but at other naval activities elsewhere in the country. The situation everywhere had grown so threatening that in September, 1943, the Surgeon General of the Navy, Vice Admiral Ross T. McIntire, called a conference of medical scientists to explore the entire problem thoroughly. This group decided on the heroic procedure of trying to halt the spread of streptococcal disease by giving small doses of sulfadiazine to every recruit during every day of his training. Mass chemoprophylaxis is the name for the procedure.

At first it was started in only a few naval stations and limited to certain groups of men. This was so the effects could be closely watched and the benefits, if any, carefully measured by comparison with what happened in similar groups not getting the drug.

After three months the results were found so good that the chemoprophylaxis was extended to other naval activities. By June, 1944, 600,000 men had been given continuous sulfadiazine prophylaxis. Only one-tenth as much streptococcal respiratory disease occurred among these men as among 350,000 not getting



TYPING GERMS—Streptococci are being typed at the National Naval Medical Center in this photograph by Fremont Davis, Science Service staff photographer

sulfadiazine prophylaxis, naval medical records showed. Rheumatic fever cases fell off. Meningitis was reduced practically to zero.

Even in Idaho's oasis, the suladiazine prophylaxis started in two camps in December, 1943, took hold. Within the first week sickness in these camps dropped precipitously. The program was extended so that after March 6, 1944, everyone at the station, including civilian employes, was getting daily doses of the sulfa drug.

During the spring months scarlet fever fell off at Farragut, though it was increasing throughout the nation. Strep sore throats, strep pneumonia, and rheumatic fever decreased at the same time.

In May, sulfadiazine programs were stopped at all naval activities. Scarlet fever and other streptococcal diseases usually fall almost to the vanishing point in the summer so it was thought safe to stop chemoprophylaxis. The oasis of Idaho, however, did not follow the rules. During the summer of 1944, as during the summer of 1943, the streptococci continued to be active. Sickness from these germs rose higher than at other naval centers.

Tried Sulfadiazine

The medical officers at Farragut tried sulfadiazine in companies with many streptococcal infections and even increased the dose of sulfadiazine. With three times the dosage that had been effective elsewhere, the streptococcal infections continued during August and September. In the late fall it was possible to stop the arrival of new recruits since facilities had become available in other localities.

Meanwhile the Navy's medical men had been looking into the matter of whether the oasis for streptococci had drug-resistant bacteria. Development of drug resistance in other diseases had been met by medical men before this experience. Sulfa drug treatment has had to be abandoned in certain individuals because of this drug resistance on the part of the disease germs. When this happens, doctors now can turn to penicillin but there may come a day when germs develop resistance to penicillin. The problem is one of far-reaching importance.

The Navy has already developed an important tool for investigating this problem. This is a special culture medium for streptococci to grow on in the laboratory. Heretofore scientists had no way of knowing whether or not a particular strain of streptococcus was sulfa-drug resistant except by what happened when the drug and the germs met in a patient's body. The reason was that the culture medium contained material that chemically blocked the action of the sulfa drugs. The Navy laboratories at Bethesda, Md., however, developed a medium containing none of these sulfa-drug-inhibiting substances.

With this medium it was found in the fall of 1944 that nearly all the streptococci at Farragut were sulfadiazine-resistant. The same types of streptococci from other naval centers, however, were not sulfadiazine-resistant. In general, sulfadiazine prophylaxis has proceeded this winter at other naval activities with promising results.

Why streptococci were sulfadiazine-

Why 109 Kinds of Optical Glass?

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Do You Know?

Babbini is a new insecticide produced in Peru to use against cotton plant pests.

Switzerland *watch factories* are working full time, and exports in 1943 were 17% higher than those of the preceding year.

Large quantities of *soap* are used in the wire-making industry to decrease friction as the wire is drawn through dies to reduce it to the desired size.

Diesel engines in various parts of the world are operating satisfactorily on linseed, cottonseed, peanut, tung, palm and camphor oils.

Waterproof *matches,* developed for use in jungle areas and at sea, will light after being submerged in water for many hours.

Forty-watt fluorescent *lamp* recently developed does not require a starter and operates on a special type of instant-starting ballast.

The *stingless bee,* scientifically *Melipona beecheii,* was the one particularly favored in Mexico and Central America; it is sometimes called the "loyal" or "lady" bee.

Foxes and minks are the two principal animals raised on American fur farms, with rabbits rating next; martens, muskrats, raccoons, chinchillas and others are raised in limited numbers.

The total amount of *iodine* found in the average man weighs a little less than a drop of water; about one-half of this essential material is located in the thyroid gland and the rest distributed to every cell in the body.

MATHEMATICS DICTIONARY

Second Printing, Second Edition

American Library Association's Subscription Books (encyclopedias, dictionaries, etc.) Committee says in Subscription Books Bulletin, Oct. 43: "In its subject field there is no work directly comparable to the Mathematics Dictionary. Because of its usefulness to anyone seriously interested in mathematics, the volume is recommended for personal, school or library purchase. For those already possessing the 1942 edition, purchase of the 1943 edition is suggested only if the dictionary is extensively used or a second copy is desired." Send $3.00 to Digest Press, Department 3B, Van Nuys, California, or Science News Letter.

From Page 187

resistant at Farragut is at present an unanswered question. It has been suggested that the germs developed the resistance as a result of the prophylaxis. The small daily doses, according to this theory, were not enough to knock out the germs but just enough to let them get used to the drug and learn to tolerate it. However, this did not occur at other naval activities where identical prophylactic programs were instituted and the same types of streptococci were present.

There is another striking difference between Farragut and other places: Streptococci at Farragut thrive 365 days of the year instead of following the usual strep life cycle of four months of increasing pathogenicity in the winter, a critical decline and then a long period of quiescence in the summer. Farragut is the only activity in the Navy where streptococcal diseases are prevalent throughout all seasons. It may be, therefore, that conditions in Idaho's panhandle favor bacterial mutation. That may explain not only the sulfadiazine resistance of the streptococci but the region's ancient reputation.

The experience at Farragut provides a warning against the wishful thinking that all you have to do to avoid sore throats, scarlet fever, rheumatic fever, and other streptococcal diseases is to take a sulfa pill every day. Chemoprophylaxis against the streptococci is a valuable adjunct and effective within certain limits but it does have its limitations. Other recognized measures for preventing the spread of streptococci, such as isolating patients even if they have only sore throats, are essential and oiling floors to control dust, ultraviolet irradiation of the air and use of triethylene glycol vapor to sterilize the air may also be called for.

Science News Letter, March 24, 1945

RADIO

New FM Converter

➤ A NEW FM (frequency modulation) converter, built by the Engineering Department of the Federal Communications Commission, will prevent the possibility of $50,000,000 worth of FM receivers now in use from becoming obsolete. The new converter will enable you to pick up FM broadcasts in the new part of the spectrum to which the FCC proposes to move FM broadcasting.

Patterned along the design of remote-control tuning devices and wireless record players which can be used with a standard broadcast receiver, the FCC converter can be operated from any convenient location in a room with the present receiver. If operated from an armchair, you can tune stations in and out without touching your main receiver, making it a lazyman's remote control.

It was developed by the FCC as a result of protests from FM broadcasters at recent hearings following the publication of FCC proposed frequency allocation.

These broadcasters declared that by moving FM up in the spectrum, the FCC was wiping out thousands of expensive receivers now in the hands of listeners. The FCC has replied by offering this converter, that is capable of converting an FM receiver geared to the present 42-50 megacycle band where FM is now located, so that it can receive the 84-102 megacycle band to which the FCC plans to move FM.

Any radio amateur or handyman can build one of these FM converters, which is about the size of a cigar box, at a total cost of $8.85 for parts that are now available in radio stores. Commercial ready-built converters will also be available for about $11. No special knowledge is needed to install one of these converters. The converter in no way affects the fidelity of tone and the quality of reproduction of sound in the FM receiver.

It is believed that FM broadcasters may take steps to make these converters available to their listening audience at cost in the event that FM is shifted.

Science News Letter, March 24, 1945

NUTRITION

Civilians Drinking More Milk Since the War

➤ CIVILIANS have been drinking more milk and eating more meat since the war. They are now drinking between 20% and 25% more milk than they drank in the prewar days, according to the War Food Administration. During the first three months of 1944, the average American was eating meat at the average annual rate of 158 pounds, as compared to 126 pounds each year in the late thirties.

Science News Letter, March 24, 1945

BOTANY

NATURE RAMBLINGS by Frank Thone

Flowers for Easter

➤ LILIES on thousands of altars, vying with the wax of the candles for whiteness, again proclaim Easter as the day of victory of life over death. They have sprung from dry-looking, seeming-dead bulbs buried in the earth. Whoever plants a bulb, whether he is a Christian believer or not, is engaged in a rite of faith: he "expects the resurrection, and the life to come."

For all their stately waxen beauty, however, the long-throated white lilies are really usurpers in their present primacy as Easter flowers. They are not natural to the season. If you planted any of their bulbs outdoors last fall, they will not be coming up into bloom now along with your jonquils and hyacinths; you will not see their flowers until midsummer. Only by forcing them in greenhouses are florists able to deliver Easter lilies in bloom at Eastertide.

It would really be more in keeping with the traditions of the Easter feast if we should bedeck our churches with the multi-hued early spring flowers that are to be found in bloom in the woods and fields and in our own gardens. That is what our forefathers did, in simpler times before the coming of florists, and commercial greenhouses. Sometimes they were even unselfconscious enough to make wreaths of fresh flowers and wear them in their own hair.

There is a wealth of early wildflowers that could very appropriately be used for a more natural Easter observance of this kind: violets, hepaticas, spring-beauties, trout-lilies, geraniums, anemones; on trees and shrubs, flowering dogwood, redbud, hawthorn, crabapple—the list might be extended indefinitely. Blossoming time for these various spring species spreads out over a month or more; but the migrations of the movable feast of Easter, from late March to late April, will always be bracketed by a goodly number of dates on the natural floral calendar. Also, some species that are too late for Easter in the North will be in bloom at just the right time in the South.

There are a few flowers that will have an especial appeal, at least to children and other persons with still-undulled imagination. There is the beautiful amethystine chalice of that prairie anemone that poetic French pioneers named for Easter itself: the pasque flower. It blossoms for the earliest dates of the feast.

For Easter's later occurrences there are several kinds of trillium, the flower that has everything in threes—even its leaves. Appreciative artists have wrought it into ecclesiastical symbols of the Trinity.

Finally (and particularly for children) is that eloquent little preacher who somehow never gets invited into a church: Jack-in-the-pulpit.

Science News Letter, March 24, 1945

METEOROLOGY

Highest Winds in World Encountered Over Tokio

➤ FLYING over Tokio at 30,000 feet or more B-29 Superfortress pilots sometimes encounter winds of 175 to 200 miles an hour, reports Col. Cordes Tiemann, Chief of Special Studies, Army Air Forces Weather Division. A normal wind in winter over Japan at an altitude of 30,000 feet is about 100 miles an hour, he stated.

Weather conditions in Japan are changeable, Col. Tiemann declared, speaking as the guest of Watson Davis, director of Science Service, on the CBS program "Adventures in Science." In summer the weather may be as foggy as the Newfoundland Coast, and winter weather in Japan is often like that in our own Chicago.

With weather stations dotted all over the Pacific and on all land areas surrounding the Pacific, the Army Air Forces Weather Division predicts weather in an area of 16 million square miles, equal to five times the area of the United States. These weather stations pass their reports along to a weather central where the information is pooled and a complete over-all weather forecast made.

Weathermen of the AAF work closely with commanding officers of combat groups throughout the Pacific, supplying them with the forecasts, upon which are based decisions to carry out aerial and invasion operations against the enemy, Col. Tiemann revealed.

Science News Letter, March 24, 1945

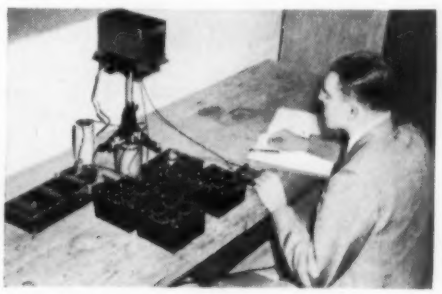
GENERAL SCIENCE

Cresson Gold Medals Go to Admiral and Engineer

➤ ELLIOTT Cresson Gold medals have been awarded for 1945 by the Franklin Institute to Rear Admiral Stanford Caldwell Hooper, USN retired, for his accomplishments in radio for the U. S. Navy, and to Prof. Lewis F. Moody of Princeton University for the leading part taken by him in the design and development of hydraulic turbines and pumps. The presentation will be made on April 18, at the annual Franklin Institute medal day ceremonies.

Cresson medals have been awarded since 1848, with Madame Curie, Rudolf Diesel, Nikola Tesla, Tinius Olsen and Roger Adams among the recipients.

Science News Letter, March 24, 1945



RESISTANCE BOXES FOR MANY USES

Those small, inexpensive Resistance Boxes, shown above in a Kelvin Bridge network, are suitable for commercial-power frequency, a-c as well as d-c. They are made in seven sizes; three 2-dial boxes having total resistance of 99,990 and 9900 ohms resp; two 3-dial boxes of 999 and 9990 ohms re.p; two 4-dial boxes of 9999 and 999.9 ohms resp. Prices range from $21.00 to $35.00.

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BIOLOGY

New Science Developed

"Tropicalization" has been developed to combat the fungi that ruin military equipment in steaming jungle regions.

➤ AMONG the most deadly enemies our armed forces in the Pacific have to face are fungi, microscopic lower plants that thrive on heat and dampness. The battle against these enemies, carried on at headquarters of the Air Technical Service Command at Wright Field, Ohio, and by Wilfred F. Horner and Helen Conlon, biologists of the Belmont Radio Corporation, has added immeasurably to the furtherance of the war effort and will continue to benefit persons in tropical regions after the war is over.

Extreme difficulties have been encountered in Pacific and other combat areas, due to effects of tropical deterioration of electronic equipment, including radar radio communication and other devices. This menace was so severe that new methods of moisture and fungus control were necessary in order that the progress of the armed forces may not be impeded.

Laboratory research and field investigations, based upon experience in certain regions such as Florida, and the Gulf and Pacific coasts, have resulted in a new branch of applied science called tropicalization. This science undertakes to prevent failure of equipment due to moisture and fungus growth. Tropicalization can increase the life of equipment over 100 times.

Fungi that attack electronic equipment are molds which obtain their nutrition from deposits of organic dust that collect during handling. These molds produce organic acids, such as citric acid or oxalic acid. They grow best in a relative humidity above 70% and in temperatures above 86 degrees Fahrenheit.

In addition to attacking electrical equipment, some of these molds are parasitic on the human body. For example, a species of *Aspergillus* grows on radar equipment and also grows in the human ear. The number of species for each genus of fungus is astonishing. There are, for example, 36 species of *Aspergillus* and over 600 species of *Penicillium*.

Some of the fungi that develop in the field equipment in the tropics are introduced in the United States at the time of assembly but do not develop until the temperature and humidity are increased. The extent of damage to electronic equipment varies with the type of equipment and the conditions under which it operates. Such units and materials as condensers, resistors, transformers, volume controls, various types of plastics, glass oils, waxes, paints, papers, leather, felt glues and rubber support numerous fungus growths. Eight species of tropical fungi were isolated from a growth on a pair of eyeglasses.

Fungicides in the form of fine liquid sprays, coatings and paints, as well as the vacuum impregnation of parts with waxes, lacquers and varnishes containing fungicides, have been developed to combat the menace. Among the fungicides that have given favorable results are *pentachlorophenol* and *salicylanilide*, in concentrations of 10% or 15% on the basis of solids content. The fungicides that have been tested are developed to protect against moisture and fungus growth without altering the basic features of materials such as electrical properties, tensile strength and so on.

Water repellents and drying agents are also used in packaging, to prevent the introduction of excess moisture in transit.

Science News Letter, March 24, 1945

Some *nemerteans*, commonly called sea-ribbon worms, may shorten their bodies to one-tenth the ordinary length.

The *Hawaiian goose*, or nene as it is known to natives, has feet less fully webbed than most geese and has become more of a land bird than water bird; it now lives on the slopes of the great extinct volcano Mauna Kea.

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Books of the Week

➤ PLASTICS, from the discovery of nitrocellulose in 1864 up to and including new developments resulting from the second World War, are discussed in PLASTICS, SCIENTIFIC AND TECHNOLOGICAL by H. Ronald Fleck (*Chemical Pub. Co.*, $6.50). Not intended to glamorize an industry which the author believes is already overadvertised, it is more a textbook of the science of plastics.

Science News Letter, March 24, 1945

➤ ONE of the most exciting stories in modern medicine, the story of penicillin, loses none of its excitement or drama in this up-to-the-minute account by J. D. Ratcliff, YELLOW MAGIC (*Random House*, $2).

Science News Letter, March 24, 1945

➤ JUST THE GIFT for your doctor is POET PHYSICIANS, AN ANTHOLOGY OF MEDICAL POETRY WRITTEN BY PHYSICIANS, compiled by Mary Lou McDonough (*Thomas*, $5). It is one of those books, however, which if you dip into it before wrapping and giving you will find yourself wanting to keep and read. Some of the selections, as Mrs. McDonough points out, hardly rate as poetry, but all are interesting for the glimpses they give of the doctor's thoughts and feelings, usually well concealed behind a detached, professional manner.

Science News Letter, March 24, 1945

Just Off the Press

CARE AND USE OF HAND TOOLS—Raymond R. Toliver—*Wiley*, 93 p., illus., $1.25.

CAREERS IN THE STEEL INDUSTRY—Burr W. Leyson—*Dutton*, 191 p., illus. $2.50.

THE DRAINAGE OF AIRPORTS—W. W. Horner—*Univ. of Ill.*, 48 p., paper, illus., 50c (Eng'g Experiment Station Circular Series No. 49).

EGG COOKERY, a Complete Handbook of Tested Recipes for Breakfast, Luncheon and Dinner—Lily Haxworth Wallace—*Barrows*, 169 p., $2.

HEAT EMISSION AND FRICTION HEADS OF HOT WATER RADIATORS AND CONVECTORS—Frederick E. Giesecke and Alonzo P. Kratz—*Univ. of Ill.*, 52 p., paper, illus., 50c, (Eng'g Experiment Station Bull. Series no. 356).

I KNEW YOUR SOLDIER, an Intimate Picture of Our Boys Overseas, by the Red Cross Girls Who Know the GI Best—Eleanor "Bumpy" Stevenson and Pete Martin—*Infantry Journal*, 237 p., paper, 25c.

IMPACT ON RAILWAY BRIDGES—Charles T. G. Looney—*Univ. of Ill.*, 128 p., paper, illus., $1., (Eng'g Experiment Station Bull. Series no. 352).

INTRODUCTORY GENERAL CHEMISTRY—Stuart R. Brinkley—*Macmillan*, 645 p., illus., $4., 3rd ed.

PHOTOGRAPHIC SURVEYING—B. B. Talley and Paul H. Robbins—*Pitman*, 223 p., illus., $3.

SOCIAL WORK YEAR BOOK, 1945, a Description of Organized Activities in Social Work and in Related Fields—Russell H. Kurtz, ed. *Russell Sage*, 620 p., $3.25. Part I. An authoritative record of organized activities. Part II. A directory of 472 national agencies in social work and related fields.

SPLICING WIRE AND FIBER ROPE—Raoul Graumont and John Hensel—*Cornell Maritime*, 114 p., illus., $2.

THE VISCOSITY OF GASES AT HIGH PRESSURES—Edward W. Comings and others—*Univ. of Ill.*, 68 p., paper, illus., 75c, (Eng'g Experiment Station Bull. Series no. 354).

YELLOW MAGIC, THE STORY OF PENICILLIN—J. D. Ratcliff—*Random House*, 173 p., illus., $2.

Science News Letter, March 24, 1945

NUTRITION

Spring Meals May Be Low In Vitamin C Content

➤ UNLESS the housewife guards against it, the family's meals in late winter and early spring may be skimpy in the amount of vitamin C they provide. The reason, according to a report from the U. S. Department of Agriculture, is that many vegetables and fruits lose some of their vitamin C content during winter storage. Tests at many state agricultural experiment stations have showed a gradual loss of vitamin C in potatoes, apples, onions, cabbage, parsnips and even in some canned fruits and vegetables during the months in storage.

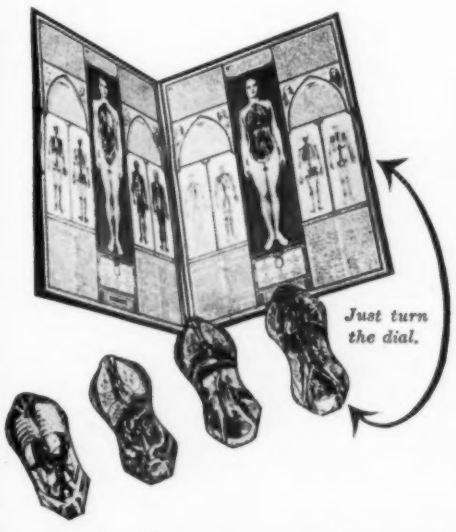
Many of these foods are not individually rich in vitamin C but each adds its bit to the daily total in the diet. C is the vitamin needed for protection against scurvy. In order to make sure early spring meals are not short in this vitamin, the Department of Agriculture scientists advise eating more of the foods that are especially rich in this vitamin, such as citrus fruits, tomatoes, fresh green cabbage and other fresh greens.

Strawberries, already coming on the market in some regions, are another good source of this vitamin. A grown person can get his vitamin C requirement for the day by eating 30 strawberries, the *Journal of the American Medical Association* has stated.

Milk contains vitamin C in appreciable amounts. One quart would supply almost half of the minimum amount of vitamin C required for the day and somewhere between a fifth and a fourth of the recommended daily allowances, the editor of *Nutrition Reviews* calculated. These round numbers apply to pasteurized milk. Raw milk has an even higher content of vitamin C, but it is also likely to have a very much higher content of dangerous disease germs, so one should stick to pasteurized milk, even at some sacrifice of the vitamin C content.

Science News Letter, March 24, 1945

The common American *snapper turtle* has no teeth but it has powerful jaws with knifelike edges, and it can thrust its jaws out with the speed of a boxer's flying fist.



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❁ *ELECTRONIC glassware, such as electric toasters, waffle irons, and other cooking utensils that can be put directly on flame, will be made after the war by a new process of molding glass with high-frequency electric current. The glassware is now used in wartime radio, radar, and other electrical instruments.*

Science News Letter, March 24, 1945

❁ *EGG-SHELL strength is tested by placing 25 eggs, small end downward, in separate compartments in a tray with four supporting casters. The tray is then permitted to run down an inclined plane fixed on a table, hitting a block at the bottom. Shells below standard strength are cracked but not broken.*

Science News Letter, March 24, 1945

❁ *LIQUID LEVEL gauge for motorcycle tanks has three glass rods of different lengths extending downward into the tank with pointed ends angled at 45 degrees. Light passing down the rod passes into the gasoline when an end is immersed; otherwise it is reflected back through the rod, brightening its visible upper end.*

Science News Letter, March 24, 1945

❁ *DE-SCALING tubes for marine and other uses involving exposure to salt water, employ the thermostat principle. Oval in cross section, the bi-metal tubing has a strip of metal of a lower expansion coefficient silver-bronzed along its length which causes the tube to bow and straighten with changing temperatures, thus cracking off the scale.*

Science News Letter, March 24, 1945

❁ *SAFETY LADDER for mechanics working on planes on airfields can not "creep" when fitted with metal brackets behind the wheels on its front support, as shown in the picture. When the ladder is tipped forward to be moved to a new position the wheels come in contact with the ground.*

Science News Letter, March 24, 1945

❁ *EYE AND NOSE protector for boxers and football players has an open frame of a strong but resilient metal fastened to a head band of leather or to the football helmet. The frame presses against the forehead and the bridge of the nose, and has a leather apron to cover the nose. Lenses may be attached if desired.*

Science News Letter, March 24, 1945

❁ *ALUMINUM DRUMS, especially developed for the Army to carry aviation fuel by air, hold 55 gallons of gasoline but weigh 31 pounds less than steel drums of the same capacity. Their use decreases the total weight of a loaded plane considerably, and assisted greatly getting fuel to American planes in China.*

Science News Letter, March 24, 1945

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 251.

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Question Box

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